

What is claimed is

1. A thin film magnetic recording head with an integrally formed, magnetically energized, preconditioning gap.

2. The thin film magnetic recording head of claim 1 wherein said head comprises a write gap aligned with said preconditioning gap.

3. The thin film magnetic recording head of claim 2 wherein said preconditioning gap is wider than said write gap.

4. The thin film magnetic recording head of claim 3 wherein each of said gaps comprise a pair of pole pieces surrounding a thin film head coil.

5. The thin film magnetic recording head of claim 4 wherein said gaps share a common pole piece, said head thereby having three pole pieces to form said two gaps.

6. The thin film magnetic recording head of claim 4 wherein said pairs of pole pieces surround a portion of the same thin film head coil, said head thereby having a single thin film head coil to energize both of said gaps.

7. The thin film magnetic recording head of claim 5 wherein said pole pieces comprise a first pole piece  $P_1$ , a second pole piece  $P_2$  having said coil wrapped therearound and having an end thereof magnetically coupled to  $P_1$ , and a third pole piece  $P_3$  having an end thereof magnetically coupled to  $P_2$ .

8. The thin film magnetic recording head of claim 7 wherein  $P_3$  is magnetically coupled to  $P_2$  through a portion of  $P_1$ .

9. The thin film magnetic recording head of claim 7 wherein the write gap is between about .10 microns and about .25 microns in width and the preconditioning gap is wider than the write gap.

10. The thin film magnetic recording head of claim 9 wherein the preconditioning gap is approximately .5 micron in width.

11. A thin film magnetic recording head having a pair of gaps, one of said gaps being a write gap, said gaps being formed between three pole pieces, the center pole piece having a single thin film coil wrapped therearound and said center pole piece forming part of the magnetic circuit for each of said gaps.

12. The thin film magnetic recording head of claim 11 wherein the other of said gaps is a preconditioning gap, said preconditioning gap being wider than said write gap.

13. The thin film magnetic recording head of claim 12 wherein said gaps are formed between a pole tip of each of said pole pieces, said pole tips having a pre-selected width, as desired.

14. The thin film magnetic recording head of claim 12 wherein said pole pieces ~~are aligned~~ and overlie each other and the coil in an integrated thin film structure.

15. The thin film magnetic recording head of claim 14 wherein said structure includes a first pole piece  $P_1$ , a substantially helically wound pancake coil overlying  $P_1$ , a second pole piece  $P_2$  overlying a portion of said coil and magnetically coupled to  $P_1$  at a medial position thereof through a center of said coil, and a third pole piece  $P_3$  overlying  $P_2$  and magnetically coupled to an end thereof.

16. The thin film magnetic recording head of claim 15 wherein  $P_3$  is magnetically coupled to  $P_2$  through a portion of  $P_1$ .

17. The thin film magnetic recording head of claim 15 wherein  $P_3$  is magnetically coupled to  $P_1$  at an end thereof to substantially surround  $P_2$  and the coil between them.

18. A magnetic recording head with an integrally formed, magnetically energized, preconditioning gap.

19. The magnetic recording head of claim 18 wherein said head comprises a write gap aligned with said preconditioning gap.

20. The magnetic recording head of claim 19 wherein said preconditioning gap is wider than said write gap.

21. The magnetic recording head of claim 20 wherein each of said gaps comprise a pair of pole pieces, with one of each pair of said pole pieces being magnetically energized.

22. The magnetic recording head of claim 21 wherein said gaps share a common pole piece, said head thereby having three pole pieces to form said two gaps.

23. The magnetic recording head of claim 20 wherein said pairs of pole pieces surround a portion of a single coil, said single coil thereby energizing both of said gaps.

24. The magnetic recording head of claim 22 wherein said pole pieces comprise a first pole piece, a second pole piece having a single coil wrapped therearound and having an end thereof magnetically coupled to the first pole piece, and a third pole piece having an end thereof magnetically coupled to the second pole piece.

25. The magnetic recording head of claim 24 wherein said head is a ring head.

26. A magnetic recording head having a write gap and an adjacent gap whose magnetic flux interacts with the write gap flux to produce an increased magnetic write field gradient.

27. The magnetic recording head of claim 26 further comprising a coil for magnetically energizing the adjacent gap.

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28. The magnetic recording head of claim 26  
wherein the same coil energizes both the write gap and  
the adjacent gap.

29. A magnetic recording head with an integrally  
formed preconditioning gap adjacent a write gap.

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